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COORDINATION QUESTIONS

International cooperation in the field of informatics

Report of the Secretary-General

SUMMARY

The present report has been prepared in response to resolution 1991/71 of the Economic and Social Council, in which the Council, having considered a follow-up report on the issue prepared by the United Nations Educational, Scientific and Cultural Organization (UNESCO), recommended that more effective use be made of the existing coordinating mechanisms, with a view to regular consultations and coordination concerning informatics within the United Nations system; invited organizations to continue to reinforce their subprogrammes concerning international cooperation and regional strategies in informatics in developing countries; and requested the Secretary-General to submit to it at its regular session of 1992 a report on the implementation of that resolution.

The present report contains the information provided by organizations and agencies of the United Nations system on their existing and planned activities in the area of international cooperation in the field of informatics, as well as on arrangements for cooperation and coordination of those activities with other organizations of the system.

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INTRODUCTION

1. At its second regular session of 1991, the Economic and Social Council discussed the question of international cooperation in the field of informatics on the basis of the follow-up report prepared by the United Nations Educational, Scientific and Cultural Organization (UNESCO) (E/1991/104). The discussion led to the adoption of resolution 1991/71, in which the Council, reaffirming the importance of the development of informatics as an instrument of international cooperation and endogenous development, recommended that more effective use be made of the existing coordinating mechanisms, with a view to regular consultations and coordination concerning informatics within the United Nations system, including consultations and coordination between UNESCO, through its Intergovernmental Informatics Programme (IIP), the International Telecommunication Union (ITU) and the United Nations Industrial Development Organization (UNIDO); invited the above-mentioned organizations to continue to reinforce their subprogrammes concerning international cooperation and regional strategies in informatics in developing countries, in particular the Informafrica project of UNESCO; and invited Member States to encourage and promote activities to expand the endogenous skills of their populations in the field of informatics and called upon donor countries to make voluntary contributions to the Intergovernmental Informatics Programme of UNESCO, with a view to strengthening its ability to provide appropriate support for projects in the field of informatics for the benefit of developing countries.

2. The Council, in resolution 1991/71, decided to keep the issue under review and to examine it at its regular session of 1992 and requested the Secretary-General to submit to it at that session a report on the implementation of resolution 1991/71. The present report responds to that request and describes actions undertaken by organizations and agencies of the United Nations system with a view to reinforcing international cooperation in the field of informatics and providing a basis for development and utilization of informatics in developing countries.

I. CURRENT AND PLANNED ACTIVITIES OF ORGANIZATIONS AND AGENCIES OF THE UNITED NATIONS SYSTEM IN THE FIELD OF INFORMATICS

3. The present section includes the information provided by organizations and agencies of the United Nations system on their existing and planned activities, as well as on arrangements for cooperation and coordination with other organizations in the field of informatics.

4. The Department of Economic and Social Development of the United Nations Secretariat, through its Statistics Division, provides considerable technical assistance to developing countries in the field of informatics in four ways: (a) implementation in countries of statistical development projects with substantial data-processing and informatics components; (b) implementation in countries of general data-processing and informatics projects that are

primarily, but not necessarily exclusively, concerned with statistical data processing; (c) provision of ad hoc assistance through advisory missions in data processing and informatics; and (d) implementation of global research, development, publications and training programmes.

5. Owing to the close interrelationship between development of data-processing and informatics applications and the development of statistical services world wide, national and international statistical services have historically been leaders in development of government data-processing capabilities. Advanced data-processing capabilities are indispensable for large-scale data-collection programmes such as population censuses, and accordingly the former Statistical Office of the United Nations Secretariat, whose functions are being continued by the Statistics Division of the Department of Economic and Social Development of the United Nations Secretariat, pioneered the introduction of such capabilities in a large number of developing countries, ranging from the smallest island countries of the Caribbean to the world's largest country, China. In recent years, the former Statistical Office of the United Nations Secretariat also pioneered the introduction and adaptation of microcomputer technologies for statistical and other government applications of every conceivable size; and the demand from countries for assistance and support, which has always been strong, continues to grow apace.

6. To meet countries' needs for assistance in data processing and informatics in statistical and related applications, the Statistics Division has four technical advisers in data processing and informatics who are devoted full time to substantive project management and country missions. They advise countries on a wide range of data-processing and informatics issues such as the establishment of national statistical databases; national strategies and policies for informatics; computer-based information systems including decision support systems, management information systems and expert systems; selection and acquisition of hardware and software; training programmes; and communications.

7. In 1989 and 1991 the former Statistical Office of the United Nations Secretariat also organized interregional workshops on population database technologies and in that same period issued several technical publications particularly emphasizing microcomputer applications, including Survey Data Processing: A Review of Issues and Procedures, National Household Survey Capability Programme; 1/ The Use of Microcomputers for Census Data Processing; 2/ Technical Papers presented at the Interregional Workshop on Population Data Base and Related Topics (Voorburg, Netherlands, 6-10 November 1989); 3/ Handbook for National Statistical Data Bases on Women and Development; 4/ A Model Survey of Computer Services; 5/ Manual on Population Census Data Processing Using Microcomputers; 6/ and Guide to Computerization of Information Systems in Criminal Justice. 7/

8. The Software and Support for Population Data Processing project funded by the United Nations Population Fund (UNFPA) in the former Statistical Office has for many years provided software and training for the editing and

tabulation of population data, for demograhic analysis of data and for population projections. The project supplies about 2,000 software packages per year to UNFPA-supported projects and institutions and conducts or assists a number of training workshops for software users.

9. The technical cooperation programme of the United Nations system in the field of statistical and related data-processing and informatics concerns is reviewed every two years by the Statistical Commission on the basis of a comprehensive report of the Secretary-General, and coordination issues are addressed by the Commission as appropriate. Inter-agency coordination of technical cooperation and of other aspects of the Statistics Division's programme in data processing and informatics is assured by the Administrative Committee on Coordination (ACC) Subcommittee on Statistical Activities. The Subcommittee has established a Technical Working Group on Statistical Databases, through which the Statistics Division maintains and issues every two or three years the "Inventory of Statistical Databases" in the international statistical system.

10. The Department of Economic and Social Development of the United Nations Secretariat has been active in the field of informatics as it also relates to the early identification, analysis and monitoring of economic trends and social conditions at the country, region and world levels. These activities cover database and software development, global economic and social modelling and technical cooperation activities and have as one of their purposes the strengthening of the flow of information for the analysis of world economic developments between the United Nations and national research units. As part of the effort to monitor recent and prospective trends in the world economy, the Development Policy and Analysis Division of the Department of Economic and Social Development of the United Nations Secretariat assembles into computerized data banks selected series from regularly generated statistical databases issued by international agencies. These historical data and forecasts are further supplemented and standardized by the Division in order to provide the most current information available on key economic trends at the country, region and world levels. These analytical databases are disseminated in machine-readable form to Member States, international agencies and national research institutes in formats suitable for their own analytical and forecasting activities. In support of its analytical work, the Division develops personal-computer-based software for summarizing and analysing the large-scale databases it maintains; this software is also distributed to outside research units along with its analytical databases. In addition to supporting empirical studies of world economic development carried out by the Secretariat, information systems of the Division containing analytical data also support special studies and advisory missions carried out by Secretariat staff at the national level and are accessible by other departments from personal computers connected to the Division's local area network.

11. In the area of economic forecasting, the Department of Economic and Social Development maintains on the United Nations computer system the world econometric model of Project Link (LINK), which is used to project short- and medium-term trends in world production, international trade and financial

flows. The LINK system consists of a large number of individual country and regional models that have been designed to interact in a consistent way and to focus on the importance of international transmission mechanisms in determining national and regional levels of economic activity and the international flow of goods, services and capital. The Department of Economic and Social Development provides central supporting services for Project Link, including the estimation of econometric models for some developing countries and regions and the quarterly preparation of forecasts of world economic growth and international trade. LINK results are used by the Department of Economic and Social Development in the preparation of its annual World Economic Survey and its semi-annual World Economic Outlook. Other international organizations both participate in Project Link and make use of its forecasts and policy simulations in their main economic reports. National participants at the second and fourth quarter meetings of the Expert Group on the World Economic Outlook (Project Link) develop and maintain the national computer models on which the LINK world model is based, and prepare an initial forecast of trends in their national economy, which may be revised by the full LINK system in the light of assumptions made by other national modelling centres. Some of them are actively exploring the possibility of on-line access to the LINK model on the United Nations computer system from their national centres through advanced telecommunications facilities. LINK forecasts are extensively discussed in the world media and serve as input into policy formulation at the national level. National econometric model development projects based on Project Link are now under consideration and once implemented are expected to contribute to improving national economic policy formulation through their use as both a tool for the early identification of emerging problems and a means of introduction of more modern methods of economic analysis into policy discussions.

12. The Department of Economic and Social Development also maintains its Global Econometric Model (GEM) on the United Nations computer, which provides long-term macroeconomic projections on key trends in economic activity and international trade at the national level. Economic projections prepared with the model are usually discussed in the ACC Task Force on Long-term Development Objectives and its Technical Working Group and form the macroeconomic basis on which more sectoral projections are prepared by agencies. GEM is supported by an extensive computerized data bank containing national accounts, commodity trade statistics and demographic estimates and projections. These data and projection results based on the model are disseminated to other agencies and national research units.

13. A third large-scale global model is used by the Department of Economic and Social Development to study the relationship between economic development and environmental change. The United Nations Global Input-Output Model has recently been redesigned and updated by a team of economists at New York University. The model provides the Secretariat with a comprehensive framework for studying long-term environmental trends and their relationship to problems of economic development and structural change. Maintenance and operation of the model, which is implemented on a supercomputer installed at Cornell University and accessed through telecommunications facilities, is presently being transferred to the Department of Economic and Social Development.

14. Another feature of activities of the Department of Economic and Social Development in the area of informatics, carried out by the Population Division, is the provision of information on population trends and on new and emerging issues and their causes and consequences for all countries. As a by-product of those activities, an extensive body of computer software and databases has been developed and these materials are distributed throughout the world, particularly in the developing countries, through the Department's software development project. The following are the software packages that have been developed by the Department of Economic and Social Development:

(a) MORTPAK-LITE, the United Nations software package for demographic measurement;

(b) QFIVE, a microcomputer program for child mortality estimation;

(c) ABACUS, a population projection personal computer program;

(d) PDPM/PC population and development projection methods for microcomputers.

15. The databases of international comparable data maintained by the Department of Economic and Social Development include:

(a) World Population Prospects, 1990, available on magnetic tape;

(b) Demographic Indicators, 1990, available on IBM-compatible and Apple Macintosh diskettes;

(c) Sex and Age, 1990, available on IBM-compatible and Apple Macintosh diskettes;

(d) Interpolated National Populations, 1950-2000, available on IBM-compatible and Apple Macintosh diskettes;

(e) Interpolated National Populations by Sex and Age, 1950-2000: The 1990 Revision, available on IBM-compatible and Apple Macintosh diskettes;

(f) Urban and Rural Places, 1990, available on microcomputer diskettes for IBM-PC compatible computers in ASCII and Lotus 1-2-3 spreadsheet format, and for Apple Macintosh computers in ASCII (text) and Microsoft Excel formats;

(g) GRIPP: 1991 (Global Review and Inventory of Population Policies: 1991), available on diskette;

(h) PRED BANK (Population, Resources, the Environment and Development), available as files readable by Lotus 1-2-3, PFS Professional File, Reflex and Systat;

(i) International Migrant Stock (Lotus files containing data on the foreign-born or the foreign population enumerated by the most recent censuses of developing countries, classified by sex, age group and country of birth or country of nationality;

(j) World Contraceptive Use Data Diskettes.

16. Technical cooperation activities in population that have been undertaken by the Department of Economic and Social Development include a training programme in demography, and population and development, as well as evaluation and analysis of basic population data and population policy and development planning, of which the development of national capabilities has remained the main objective. In these activities, extensive use has been made of microcomputers for which a large number of software packages continue to be distributed through the Department's software development project.

17. The Department has some record of activities and projects in the area of informatics relating to science and technology, energy, water resources, mineral resources and other important sectors of national economies, in particular of developing countries. Thus, in the field of energy, training courses are presently being carried out in Ecuador on microcomputer applications for national energy planning, and specific software packages have been developed to that end. Projects for an electric power energy database are being developed in Egypt and other countries of the region. Another project related to the revision and expansion of national and subsectoral energy models is being carried out in Bangladesh. A number of projects relating to the management of integrated water resources and the elaboration of water master plans contain database and informatics components. A special software package has been developed for the evaluation of the quality of well water and groundwater, and is available to developing countries free of charge. A seminar for francophone African countries on the use of microcomputers in water resources planning and management will be held in Côte d'Ivoire in May 1993.

18. The activities of the United Nations Office at Vienna in the field of informatics are carried out within the Women's Information System (WIS), a computerized bibliographic database and software application developed and managed by the Division for the Advancement of Women of the Centre for Social Development and Humanitarian Affairs. WIS is an application of a programme designed by UNESCO and can be used on any IBM-compatible personal computer. An installation package is available along with user's manual and record guidelines. The software is trilingual (English/French/Spanish). The WIS database contains references for 3,500 United Nations system documents published since 1985. At present there are about 30 different users of WIS in all regions of the world, both in governmental offices for the advancement of women and non-governmental organizations, as well as in various United Nations organizations.

19. The United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) has completed an in-depth study of its information systems

requirements at both headquarters (Vienna) and its area of operations in the Middle East. Pursuant to that study, the Agency is planning, if possible, to utilize the United Nations Secretariat's integrated management information system (IMIS) now in development. A working relationship will be established with the IMIS project, firstly, in order to determine the degree to which IMIS is suitable for UNRWA and, secondly, to prepare for future adaptation and use, if necessary.

20. At the same time, interim solutions to UNRWA's immediate needs will be sought through the improvement of the existing systems and the use both of systems available from other United Nations organizations and, where feasible, of commercial packages. With regard to utilization of the existing coordinating mechanisms, UNRWA maintains regular contacts with the Advisory Committee for the Coordination of Information Systems (ACCIS) in Geneva.

21. The United Nations University (UNU) launched its Microprocessors and Informatics Programme in 1983, as a response to the concern of developing countries facing the challenge of the new information technology. The main task of the Programme is to help the scientific and academic communities, particularly in developing countries, to strengthen their scientific and technical capabilities in this field by assisting them in initiating and improving relevant research and training in their home institutions.

22. In 1990-1995, the UNU Microprocessors and Informatics Programme will be focusing on three areas. (Most activities coordinated by the University are being carried out jointly with other universities and research institutions throughout the world, especially in the developing countries.) Those areas are:

(a) Design of real-time control systems, that is, integrated microprocessor-controlled instrumentation;

(b) Research and advanced teaching of informatics (computer science) in selected universities combined with outreach activities;

(c) Informatics for system design and management of complex man-made systems.

23. Within the first area of activities are research and training at the Microprocessor Laboratory in Trieste in cooperation with the International Centre for Theoretical Physics of the International Atomic Energy Agency (IAEA), which are based on a grant to UNU from the Government of Italy. International colleges in Trieste and regional training courses in Latin America, Asia and Africa are being organized. UNU assistance is being provided to scientific instrumentation laboratories and microprocessor-support units at universities in Latin America and Africa.

24. The second part of the programme includes advanced academic teaching in informatics and front-end research on parallelism and database management systems at the University of Yaoundé in Cameroon, carried out by UNU in cooperation with the National Institute for Research on Informatics and

Automation in Paris. This joint project started in 1985 and is presently being extended to other universities in Western and Central Africa, thus contributing to the establishment of a regional research and training network in informatics. In 1992, the First African Conference on Research in Computer Science will be organized with the support of the Government of France. Common research projects will be established between African, Latin American and Indian universities with the support of research funds in France and Spain. Regional workshops in Africa will be organized by UNU in 1992 and 1993, in cooperation with universities in Ireland.

25. Within the third area of the UNU Microprocessors and Informatics Programme, the Information and Decision Systems (INDES) project is being carried out to promote research on the set of specific constraints prevailing in developing countries that prevent them from using existing advances in informatics in the design and management of complex man-made systems, for integration of their systems that are of vital importance for development with the global ones. Within the INDES project, two workshops were organized in 1990 and 1991 and were attended by specialists from both industrialized and developing countries, thereby initiating a number of studies, research and other activities to be launched at a later stage by UNU.

26. UNU is planning the following activities in the area of informatics for the period 1992-1993:

(a) One research and development demonstrator project, scheduled to begin in late spring 1992 and to be followed by further demonstrator projects in 1993;

(b) One three-month training course involving between 25 and 30 participants, to take place in the fourth quarter of 1992 (two such courses are planned for 1993);

(c) Three or four workshops to take place in 1992, and some in 1993;

(d) An international software technology symposium for 120 participants, to be convened in December 1992, and another similar forum in 1993;

(e) Several seminars, to be organized in developing countries in 1992 and 1993;

(f) A number of publications and scientific/technical reports on various aspects of informatics, to be produced in 1992 and 1993.

27. UNU has no regular formal coordination with other organizations of the United Nations system, except some consultations with UNESCO within the scope of its Intergovernmental Informatics Programme (IIP), and the exchange of information on respective programmes with the Informatics Unit of the United Nations Industrial Development Organization (UNIDO). At the operational level continuous close cooperation between UNU and the International Atomic Energy

Agency (IAEA) in the field of micro-informatics has existed since 1983. Activities in some areas of informatics are being coordinated through ACCIS, and UNU adheres to such an arrangement.

28. In the view of UNU, a formal and regular, but at the same time flexible, coordinating mechanism that could contribute to the effectiveness and quality of the relevant programme activities in the field of informatics within the United Nations system would be desirable.

29. The Economic Commission for Africa (ECA), through its Pan-African Documentation and Information System (PADIS), delivers advisory services and other forms of technical assistance to African member States on information technology applications for development information and planning. Technical assistance workshops have included training in basic microcomputer software and in software for information management and computer-assisted publishing. Project documents have been submitted to bilateral and multilateral donors to fund operational activities to assist African States in the adoption of new forms of information technology. An ongoing project has established a computer-based communications network linking 12 African countries. There are plans to extend this to other countries of the region and to investigate alternate technologies, such as microsatellites.

30. The Economic Commission for Africa is in close cooperation with the Intergovernmental Informatics Programme of UNESCO.

31. The Economic and Social Commission for Asia and the Pacific (ESCAP) has, since 1986, been engaged in activities under its statistics programme in the field of government data processing and computerization, in order to promote the use of informatics in the government sector of developing countries in the region. These activities are being planned and implemented with emphasis on the needs of the least developed and Pacific island developing countries.

32. The objectives of the statistics programme, as relevant to the field of informatics, are:

(a) To help the developing countries of the region analyse the major policy issues facing them and to suggest feasible measures for their solution;

(b) To assist countries in improving their skills in the formulation, implementation and management of development activities;

(c) To foster the utilization of modern information technology in the public sector in order to strengthen the ability, at both the central and subnational levels, to plan and manage economic and social development.

33. In order to meet the above objectives, the secretariat of ESCAP has initiated activities within the framework of technical cooperation in the form of consultancy and advisory services, training, seminars and workshops. The training activities are designed to expand the human resources skills of the national Governments in the field of informatics. These programmes are being

implemented as regular activities of the statistics division of ESCAP or as cooperative efforts with other divisions of the ESCAP secretariat, or in collaboration with other organizations and agencies of the United Nations system.

34. In government computerization, the courses of action of the ESCAP secretariat focus on the realization of the potential of information technology and the intensification of its use throughout government departments. The application of informatics in the public sector offers one of the most promising prospects in developing countries for improving the planning and management of development. Moreover, it is firmly believed that government computerization together with a national informatics policy will play a key role in the development of so-called information industries in the developing countries of the region.

35. The ongoing activities of ESCAP also include advisory and consultative services in system analysis and data processing. In 1991 ESCAP was engaged in such training activities as "ISI/ESCAP workshop on computer applications in health and demographic data analysis" and "DTCD/ESCAP workshop on computer-aided map production". In the area of government computerization ESCAP is planning the formulation, inter alia, of national informatics policy and strategy, human resources development and institution building. A newsletter on government information systems is in the process of finalization. The secretariat of ESCAP is cooperating with the United Nations Population Fund (UNFPA) in providing advisory and consultative services, along with relevant training, to member countries in the fields of data processing and computerized population information.

36. At the United Nations Centre for Human Settlements (Habitat) there exist a number of information services and databases covering various aspects of human settlements policies all over the world. The list of these services and databases includes: S.172. Training Unit; S.173. UNCHS (Habitat) Film Library; S.174. UNCHS (Habitat) Information Systems; S.175. UNCHS Documentation Service; S.316. Database of Periodical Titles (HSPER); S.317. Database on Ongoing Development Research Projects in the Field of Human Settlements (HABIRES); D.320. Human Settlements Literature Database (HABILIT); D.321. Human Settlements Statistical Database (HSDB.STAT); D.322. Human Settlements Training Institutions Database (HUSTI); D.323. Monograph and Periodical Article Database (HSLIB); D.324. UNCHS (Habitat) Trilingual Thesaurus in the Field of Human Settlements (HABIVOC); D.325. UNCHS (Habitat) Unpublished Reports and Films; and D.326. UNCHS Information Systems (Database) (HABIDOC).

37. All the information services and databases of the Centre are accessible to both United Nations system organizations and external users such as reciprocating agencies and/or depository libraries.

38. For the current biennium (1992-1993), the Centre has the following planned activities in the field of informatics:

(a) Database on textual and audiovisual materials;

(b) Database on national human settlements policies and instruments;

(c) Geographical information systems for land management;

(d) Computer software for selection of refuse collection vehicles in developing countries;

(e) Database on non-governmental organizations in the field of human settlements;

(f) Computerized construction sector database.

39. As regards cooperation and coordination between the Centre and other organizations and agencies of the United Nations system with respect to the above-mentioned activities, the Centre is working closely with the Advisory Committee for the Coordination of Information Systems (ACCIS) and has provided input for various publications and databases of ACCIS.

40. The Information System Section (ISS) was created at the Office of the United Nations High Commissioner for Refugees (UNHCR) in 1978 in response to the dramatic events taking place in South-East Asia. The Section provides UNHCR with expertise and resources for the identification, development and support of electronic data-processing applications. The main objective is to apply information technology to enhance operational, administrative and managerial effectiveness at headquarters and in field offices.

41. Demand for computer facilities increased rapidly over the two-year period 1990-1991, and in particular the global events of 1991 saw a dramatic increase in the use of personal computers in field operations. As a consequence, more than 70 per cent of ISS resources were absorbed by support of existing applications and equipment and the installation of new computers. The number of computer users increased from approximately 1,200 at the end of 1989 to 2,000 at the end of 1991; and there was an increase in the number of computer workstations, from 1,000 to 1,700, over the same period, along with an increasing demand for personal computers (both desktops and laptops). The installed base of personal computers increased from 700 to more than 1,500.

42. There has been increasing use made of personal computers by all levels of staff for word processing, spreadsheets, presentation graphics, and database applications. Personal computers are widely used in the field in refugee management systems, inter alia, for refugee registration, individual case monitoring, appeals tracking, family tracing and reunification, assistance tracking, education monitoring, repatriation, resettlement, integration and protection. Personal computers are also used in field management systems, inter alia, for financial management, project management, personnel management, procurement, materials tracking and administration. Extensive use was made of personal computers during the emergency situation in Iraq, the Kassala repatriation in the Sudan and the South Africa repatriation exercise.

43. At UNHCR headquarters progress was made on large development projects, the Personnel Project and Financial Management Information System (FMIS). The Personnel suite of applications was completed at the end of 1991. Further elements of the FMIS project were developed and implemented in both the field and at headquarters (HQ). Within FMIS/HQ a new administrative budget preparation system was installed. FMIS/Field systems were implemented for project management and monitoring, partner recording and administrative budget preparation. Each field system provided for electronic data interchange to headquarters. Major enhancements to the field office accounting system were also provided.

44. Two further legal databases were established at headquarters: a legislation database and an international instruments database. A personal computer package was selected for the distribution of textual databases to the field offices and a pilot database was set up in South-East Asia.

45. Substantive initiatives approved during 1991 and currently under way include a headquarters-wide local area network (LAN), an improved global electronic mail (e-mail) facility and a commitment by UNHCR to the United Nations project on the integrated management of information systems (IMIS). LAN will provide UNHCR with a cost-effective platform for developing future applications and permit a rationalization of technologies. The first phase of LAN, which comprises connecting all existing personal computers in headquarters, was scheduled for completion in April 1992. The global e-mail system will offer significant reductions in telecommunication costs through a network of land, satellite and radio communication facilities. The adoption of industry standard technology will permit UNHCR to communicate with all other organizations and agencies that have also adopted industry standards.

46. During the biennium 1990-1991, UNHCR continued to express its commitment to the concept of sharing United Nations-wide computer applications and facilities. In 1990 it was agreed that UNHCR would utilize, wherever possible, those applications being developed by the United Nations Secretariat under the IMIS umbrella. To this end, a full-time IMIS coordinator was established in 1991.

47. UNHCR does not have a formal long-term technical strategy, owing in part to the lack of a long-term development plan. Twelve-month plans have been agreed to, and the Organization is moving towards a flexible three-year plan. The short-term technical strategy includes, inter alia:

(a) Rationalization of current technologies (hardware and software);

(b) Improvement of the use of personal computer technology at headquarters and in the field;

(c) Phasing out of Wang technology during 1992;

(d) Standardization on CUA-compliant personal computer software for consistent user interface across applications;

(e) Movement towards open systems and industry standards, for example.

48. Technical assistance of the International Trade Centre (ITC) of the United Nations Conference on Trade and Development/General Agreement on Tariffs and Trade (UNCTAD/GATT) to developing countries regarding applications of Electronic Data Processing (EDP) was initiated in the late 1970s and has grown rapidly since 1984, with the availability of microcomputers at relatively low cost in most developing countries. The EDP unit established at the Centre in 1984 assumes the responsibility of maintaining and developing all computer applications and performs the technical supervision of all EDP activities, including EDP input into its activities of technical cooperation, which counts over 60 projects at the national, regional and interregional levels.

49. ITC has developed its expertise regarding the development of specialized applications in the field of informatics and telematics through its own experience, the know-how of EDP consultants and cooperation activities with partner institutions, notably ACCIS, the Economic Commission for Africa (ECA), the Economic Commission for Latin America and the Caribbean (ECLAC), the European Economic Community (EEC), ESCAP, the International Computing Centre (ICC), the International Labour Organisation (ILO), UNCTAD, UNESCO and the World Bank.

50. In many cases, it was necessary to secure a minimum of computer literacy in beneficiary countries, through basic training of operators and programmers, in parallel with the acquisition and installation of microcomputer hardware and standard software packages (for example, DisplayWrite, WordPerfect, Works, Lotus 1-2-3, DBase, Harvard Graphics). Specific applications have been developed for improving the efficiency of particular functions of trade promotion, using standard software packages or compiled programs, notably in the following areas:

(a) Statistical analyses, that is, use of Lotus 1-2-3 with macro-instructions, DBase/Clipper programs for specific analyses, SAS applications and C language programs for advanced applications. These programs facilitate the processing of COMTRADE statistics supplied on request by ITC;

(b) Bibliographic references, that is, use of the CDS/ISIS software of UNESCO or DBase/Clipper programs, for managing library indexes and catalogues and similar databases;

(c) Company registers: a standard format, COMREG, was designed in 1991 for easier data interchange and matching of importers/exporters. Various programs have been developed based on this format using DBase/Clipper or C language;

(d) Telematic applications: access to commercial on-line databases and to the electronic bulletin board of ITC (hosted by ICC) is developed with standard telecommunication software (for example, Mirror, Procomm, Crosstalk,

Works II) or special programs (for example, PCWS of ICC, FTTERM of IBM), with various manuals on database selection and search strategies.

51. The above applications have been introduced so far in over 40 developing countries through national projects of technical cooperation. Important efforts for standardizing those applications have been deployed with a view to facilitating the dissemination of compatible programs and the exchange of data based on common formats, notably through regional projects (for example, PTA, CEAO, ECOWAS and ECCAS in Africa; TISNET in Asia; CARTIS in the Caribbean region; and RELIC in Latin America).

52. A package (TRAINS) including information on trade control measures, trade statistics at tariff level, importers profiles and references to published market research has been developed with a retrieval software in cooperation with UNCTAD.

53. Various EDP applications have been integrated into some organizations of developing countries making use of minicomputers or personal computer networks linked to international telecommunication services. For example, trade promotion centres have been linked up to their national branches and overseas trade offices (OTONET networks) in Ecuador, the Philippines, Thailand and Tunisia.

54. While the development and dissemination of ready-made programs will be continuing for the standard applications required in many developing countries, ITC will have to expand its technical assistance in the form of consultancy and training for the introduction and integration of new technologies, including hardware, software and telecommunication systems. A number of research and development activities will be necessary for the purpose of designing and testing new EDP applications and to assess their conditions of implementation within the context of countries with different levels of development.

55. The development of trade information networks, inter alia, between chambers of commerce, members of regional economic groups and member companies of international trade associations will require sustained efforts of standardization and cooperation with partner organizations for securing the necessary system compatibility and data interchangeability. Wider cooperation will also be required with trade information sources - publishers, on-line database hosts and suppliers of data on magnetic tapes, diskettes and compact disks read only memory (CD Roms) - in order to facilitate their access from developing countries through appropriate economic channels, with possible conversions and adaptations by ITC. The integration of computerized trade information applications into wider systems/networks often implies important investments in the developing countries and will continue to require high-level expertise and exchanges of experience.

56. The introduction of new EDP technologies opens new prospects for reducing the information gap of developing countries. However, the role of ITC is not limited to its technological features, for ITC aims at developing efficient

trade information services and networks using appropriate tools in a cost-effective way. In order for ITC to achieve this goal, substantial efforts have to be pursued in parallel with respect to the development of human resources, frequent adaptations to data sources and guidance at the management level, so as to meet the requirements of the business community in the developing countries.

57. The activities of the International Labour Organisation (ILO) in the field of informatics for member States cover two areas: (a) provision of computerized information services and (b) development of information systems within projects designed to reinforce national capacities to manage social and labour programmes.

58. The first category includes the bibliographic database of the organization (LABORDOC), a bibliographic database on national social and labour legislation (NATLEX) and a full text database on international labour standards and their application (ILOLEX). These databases are available on line from ILO headquarters or commercial services, on diskette or on CD Rom. Other databases, on, for example, the structure, organization and activities of employment and labour inspection services, are under development.

59. In the second category are technical cooperation projects or project elements aimed at the computerization of employment services; of inspection services; of the collection, analysis and dissemination of labour statistics; and of the development of low-cost labour market information systems. Such projects may include the selection or development of software systems, identification of appropriate hardware, provision of training and publication of reports.

60. During the past few years, the increasing involvement of the Food and Agriculture Organization of the United Nations (FAO) in the area of informatics in developing countries has been effected through the provision of support to the information technology component of hundreds of FAO field projects throughout the world. That support has been given in such subject areas as analysis of user needs and subsequent development of computer-based applications and information systems, and formulation of mid- to long-term information technology strategies for ministries of agriculture as well as other government agencies.

61. On occasion, attempts are made by FAO to coordinate its field project activities with other ongoing, parallel development activities involving other organizations and agencies of the United Nations system. However, in the view of FAO, there is considerable room for improving this type of coordination, in particular in those cases where standardization of equipment, software, data or procedures is required in order to achieve effective automated systems.

62. The activities of the United Nations Educational, Scientific and Cultural Organization (UNESCO) are designed to place informatics at the service of development by following the priorities (which include human resources development, informatics networks, software development, research and

development, and informatics strategies and policies) set out in the Intergovernmental Informatics Programme (IIP) and the guidelines laid down in the regular action programme.

63. The aims of IIP are to strengthen international and regional cooperation with regard to exchanges of information, experience and know-how in the field of informatics and to contribute to the development of informatics infrastructures. This will be done in practice through the holding of the fourth session of the Intergovernmental Committee for IIP and the meetings of its Bureau. In addition, support will be given to the IIPNET network, which includes 400 institutions specializing in informatics, as well as to regional meetings of the focal points for IIP from member States, especially the least developed countries, in order to facilitate their participation in IIP activities.

64. Another sector of IIP activities concerns project implementation. IIP support was given to 20 projects during 1991. The projects concerned training of specialists and trainers in informatics, promotion and strengthening of information exchange and development of software production centres. IIP activities also cover the strengthening of existing informatics networks, including the Arab Scientific and Technical Information Network (ASTINET), the Regional Informatics Network for Africa (RINAF), the Regional Informatics Network for South-East Asia and the Pacific (RINSEAP) and the Regional Network for Cooperation among Institutions Specializing in Informatics (RCII).

65. These areas and priorities for action are the focus for cooperation between UNESCO (for all matters relating to training in and use of informatics), the International Telecommunication Union (ITU) (for all matters relating to the establishment of links between countries and institutions) and the United Nations Industrial Development Organization (UNIDO) (for all matters relating to economic and industrial applications of informatics). In this context, the Informafrica programme and the Regional Informatics Network for Africa project, which were launched on the initiative of UNESCO in the framework of IIP, were submitted to ITU and UNIDO at the meeting of a consultative group on informatics for development held in November 1991 in Vienna.

66. Informafrica is the informatics component of the UNESCO Priority Africa programme and is intended to be an instrument of regional strategy. The aim of the project is to develop informatics and its use in educational systems. At present the project is focusing on the development of human resources through the training of software specialists, maintenance technicians, managers and trainers. Together with the development of informatics, special emphasis is being placed on maintenance. The setting up of maintenance training centres will be the starting-point for a genuine maintenance policy, which will be another area of cooperation between UNESCO and UNIDO.

67. The RINAF project launched in the framework of IIP is designed to establish the means for making possible during an initial period the exchange of scientific and technical information throughout the African continent.

This network will be divided into smaller networks and will be based on national and regional centres, which will establish links on the one hand between the national institutions of different African countries and on the other with international networks. ITU and UNIDO should be able to cooperate in this project, while the contribution by UNESCO will be the preparation of human resources for subsequent applications.

68. Provisions have been made in the Organization's work plan for 1992-1993 for the coordination of UNESCO informatics activities with those of other agencies of the United Nations system. The total budget for the informatics programme for 1992-1993, approved at the twenty-sixth session of the General Conference, is 60 per cent higher than that for 1990-1991. The work plan provides for cooperation with UNIDO, ITU and the United Nations University (UNU) in the form of training courses and workshops for informatics research workers and specialists, with a view to carrying out cooperative research projects on regional topics as a matter of priority. In addition, the United Nations agencies will be invited to coordination meetings, such as the sessions of the Intergovernmental Committee of IIP. Undertaken in this spirit, cooperation will continue and expand.

69. The existing and planned activities of the International Civil Aviation Organization (ICAO) with respect to technical cooperation with developing countries are primarily organized to provide assistance in the field of civil aviation, with activities related to informatics constituting a complementary tool. In the area of statistical collection of data, ICAO accepts such data in spreadsheet or ASCII format on either magnetic tape or diskettes. Provision of software to States to assist in their data-collection efforts is planned. Databases on air transport are also sold on magnetic media.

70. As regards information databases, these exist primarily in the field of air navigation with an Airport Characteristics Database available on line, although a Digest of Bilateral Air Transport Agreements is also maintained in magnetic format. Other information databases are provided on magnetic media on an ad hoc request basis, both to States and to other international organizations.

71. ICAO cooperates with other agencies of the United Nations system with regard to informatics through ACCIS.

72. The objective of informatics management in the World Health Organization (WHO) is to provide information support to WHO management, by means of the application of computer services for the automatic storage, processing, retrieval, presentation and transmission of information, in order to facilitate the implementation of the Organization's programme and to provide advisory services in this area to support health management in countries.

73. Microcomputers are the primary computing resource used at the offices of World Health Organization representatives in over 100 countries, at the six WHO regional offices and at headquarters in Geneva. However, at some offices mainframes and minicomputers are available. Four of the six WHO regional

offices have local area networks, and a fifth is scheduled to bring a network on line in 1992. The result will be an enhanced capacity to share resources, exchange information, utilize common information or corporate systems within the Organization and provide information that is requested by member States. Such systems, which have been developed and are being used for both internal and external purposes, are operational in the areas, inter alia, of bibliographic reference material, information on individuals and institutions collaborating with WHO and supplies management. Telecommunications links via computer have also been developed both in regional offices and headquarters.

74. Advisory support is provided to some member countries for the development or updating of various components of their national strategy for informatics support in the health sector. Annual training seminars are held for middle-level managers in national health services on the use of small-scale application of computer servers in the management of health care.

75. Cooperation on matters related to informatics, including health informatics, has been maintained with organizations and bodies of the United Nations system. The WHO Information Technology Office (ITO) in Geneva is the focal point for informatics coordination in the United Nations system, particularly with regard to the Advisory Committee for the Coordination of Information Systems (ACCIS) and the International Computing Centre (ICC) cooperative in Geneva.

76. With respect to the future, the WHO informatics management programme will continue to monitor technical developments in the computer field and advise management on the optimum use of the new technologies and on the development of software applications to support programmes. All users will be brought into local area networks at various WHO offices and information systems available therein will be expanded. ITO at Geneva has initiated a study on the future WHO environment for major computing applications that will be completed in 1992. Computer linkage between major offices will continue to be worked upon, with the aim of initiating information exchange between programmes and providing a global management information system. Training of staff in the new technologies will remain a major priority.

77. Advisory support to countries will continue and a number of new collaborating centres in the health informatics fields are expected to be established. Further training sessions for national health managers will be held. Participation in internal consultations relating to standards setting in this field will take place. A greater integration of telecommunications and informatics is envisaged as promising both efficiency in information distribution and cost reductions. Further work will be needed on linking all WHO offices world wide. The requirement to improve the on-line access to WHO computer-supported databases by member States is a high priority. WHO will continue to act as the independent technical forum for regional and international standards on data, format (for example, of health records), software and legislation related to health informatics.

78. The Universal Postal Union (UPU) has come out with the initiative of establishing an on-line database containing information on various aspects of the postal services that should be accessible to the postal administrations of all member countries. In addition, UPU is working towards the adoption of the Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT) for the exchange of day-to-day operational information between postal administrations, and between postal administrations and the airline companies and customs authorities. In the establishment of the EDIFACT service, UPU will be guided by the relevant International Organization for Standardization (ISO) norms.

79. With particular reference to developing countries, the undertaking of a consultancy study aimed at covering all aspects of their needs in relation to the EDIFACT service is being planned by UPU during the second half of 1992. The study will:

(a) Examine already existing EDIFACT applications in developing countries;

(b) Establish which postal administrations are interested in and capable of joining the network at an early stage;

(c) Quantify, in terms of traffic levels and equipment needs, costs at the various levels at which postal administrations of developing countries could join the network, ranging from the level of a minimum basic application up to that of full integration;

(d) Establish the costs that would be incurred at different levels in terms, inter alia, of types of computer and other equipment needed, numbers of staff required, necessity for training printing of bar-coded labels and other ancillary equipment.

80. UPU is also planning to form a group or consortium of technically advanced nations to assist developing countries establish a system on the basis of BLT (Build, Lease and Transfer). The system would be installed and leased out to a requestee country and the lease money would be realized out of the postal dues owed by a developed country performing the service. After the settlement of all dues, the system would be fully transferred to the requestee country.

81. The International Telecommunication Union (ITU) deploys continuous effort for harmonization, development and enhancement of telecommunications throughout the world, with particular emphasis on the requirements of developing countries. This includes the development of telecommunication networks in order to provide access to informatic systems and database centres all over the world.

82. To enhance the existing coordinating mechanisms, ITU and UNESCO have elaborated a draft agreement with the aim of ensuring better cooperation with regard to telecommunication programmes and projects including informatics. This agreement is now under process of finalization.

83. In accordance with Economic and Social Council resolution 1991/71, ITU, UNESCO and UNIDO have been cooperating within the framework of the Consultative Group on Informatics Technology for Development (COGIT), which is sponsored by UNIDO, and had its last meeting in November 1991. The Group recommended consideration by the three organizations of a pilot project for one of the developing regions (see para. 98 below).

84. The World Climate Data and Monitoring Programme (WCDMP) of the World Meteorological Organization (WMO) implements the following major projects that concern informatics: (a) Climate Computers (CLICOM), dealing with the collection, quality control and archiving of climate data; (b) Data Rescue (DARE), dealing with rescue of deteriorating climate manuscripts through the use of microfilming and advanced data management; and (c) Information Catalogue of Reference to Climate System Datasets from centres world wide (INFOCLIMA).

85. The extent of the first project, CLICOM, is attested by the installation of computer hardware and software in the Meteorological and Hydrological Services of 97 member States. Many countries have multiple installations with the use of CLICOM spreading to university communities and other scientific institutions.

86. CLICOM is actively supported by financial and technical contributions from a number of industrialized States, particularly the United States of America, France and the United Kingdom of Great Britain and Northern Ireland, via the WMO Technical Cooperation Programme, including UNDP projects. CLICOM makes it possible for many developing countries to have ready access to the full range of national climatic datasets of developed States and to more easily exchange climatic data internationally. A group of world-wide CLICOM experts has been formed to provide installation-related training, and the group will be aided by the continuing development of CLICOM area support centres.

87. The DARE project, combined with CLICOM, is aimed particularly at assisting developing countries in the management, preservation and use of their climatic data. This project is the continuation of the Data Bank Project started in 1979. It has been vitally supported by the Government of Belgium with the establishment, in Brussels, of the International Data Coordination Centre, which has coordinated the project through planning, training and microfiching, digitalization and inventorying of microfilming records. UNEP has financed the purchases of microfilming and reading equipment.

88. The INFOCLIMA Information Catalogue of Reference to Climate System Datasets contains references to more than 1,000 datasets from 280 data centres throughout the world. The catalogue is updated every two years, and a continual effort is under way to query contributors concerning changes in the status of their climatic databases. The World Climate Data and Monitoring Programme of WMO is in the process of producing a CLICOM-like digital version of a subset of the catalogue on a personal computer (PC)-Database that will allow member States with CLICOM PC systems to access information on line.

89. WMO cooperates closely with member States through its World Weather Watch (WWW) programme which provides observational data and products, that is, analyses, forecasts and other environmental information, to national meteorological centres. That programme coordinates activities on the gathering, production and distribution of vital meteorological information on a world-wide scale.

90. The WWW programme comprises the following three basic components: (a) the Global Observing System, (b) the Global Telecommunication System and (c) the Global Data-Processing System. This structure has been in place for over 25 years. The Global Observing System generates weather observations through some 9,500 stations on land, 7,000 ships at sea, 3,000 aircraft and a system of polar orbiting and geostationary satellites. The Global Data-Processing System, which provides weather analyses and forecasts to member States, consists of about 160 national centres, 29 regional specialized meteorological centres and 3 World Meteorological Centres. Some of those centres, in cooperation with ICAO, produce specialized information for civil aviation; others, in cooperation with IAEA, provide special products, inter alia, for meteorological support in case of accidental release of hazardous material. The Global Telecommunication System provides services, through the integrated network of 250 point-to-point circuits, satellite-based dissemination systems and radio broadcasts, for the rapid and reliable collection and exchange of the required observational data, meteorological analyses, forecasts and warnings between member countries.

91. WMO assists its members in planning and coordinating implementation of systems exploiting new opportunities in the informatics field by providing a framework of coordinating bodies, such as the WMO Commission for Basic Systems, working groups, expert meetings, consultant services, training and equipment support. It also works towards bridging the technological gap between countries. Suitable interfaces, transition arrangements and support are being developed within the WWW programme to ensure that those countries with limited resources and less sophisticated equipment can obtain the meteorological data and products that they require for their national economies.

92. In the last year the secretariat of the United Nations Industrial Development Organization (UNIDO) has promoted the concept of software as an industry and assisted developing countries to promote that industry. The concept has been elaborated through several studies dealing with software development and applications for developing countries, the approach to software production in those countries, and guidelines for organizing software houses. Further work in this area would include the promotion of software links to industry for specific applications of relevance to developing countries.

93. Software technology is now being recognized as an important new sector deserving development in itself. The most important elements of informatics technology from UNIDO's point of view may include the following:

(a) Industrial software applications;

(b) Software as a small-scale industry;

(c) New production technologies for software;

(d) Standardization and legal aspects in both hardware and software;

(e) Monitoring development of software technology.

94. The key issue in the development of software products is a demand for computer applications.

95. In order to improve product quality and effectiveness in the small- and medium-scale industry sector, particular emphasis is being given to demonstration projects for that sector. Demonstration projects yielding tangible and measurable improvements in productivity in various sectors of the economy are of vital importance to opinion building among planners, economists and administrators in developing countries.

96. The implementation of this approach is being carried out through the Regional Network for Micro-electronics in the ECLAC Region, which has the support of 15 countries from that region. As part of the project, a training course for trainers in design of integrated circuits (ICs) was held at the International Centre for Theoretical Physics at Trieste in February 1991. Studies were completed for Argentina, Colombia, Cuba and Ecuador, while activities concentrating on legislation in informatics continued. Three technical publications on the development of policies and programmes in informatics in selected developing countries were published as were four country-level reviews on the potential and actual applications of informatics for manufacturing technology in small industry. One profile of microprocessor application centres/laboratories suitable to developing countries, one review of trends in software tools and their implications for software production and exports by developing countries, and two reviews of trends in the development of service industries related to informatics technology in developed and developing countries were carried out.

97. As regards assistance in technological cooperation at the enterprise level between developed and developing countries in micro-electronics and software, possible partners for a joint venture in software production between the United States and Trinidad and Tobago are to be identified and a detailed concept for microprocessor application centres for developing countries is to be elaborated. Seven studies on the subject have already been carried out. In addition, a project for the first phase of an assessment of the capacities and capabilities for the manufacture of telecommunications equipment in Africa, to be funded by the Government of Italy, was approved. A survey of telecommunications services and the telecommunications industry was also completed. A workshop for African and Arab country representatives from the telecommunications industry was held in New Delhi (India) from 3 to 12 September 1990 and a meeting on technological cooperation for the

development of the telecommunications industry in the region of Asia and the Pacific was held in Bangalore (India) from 9 to 13 December 1991. Reports of both meetings are available.

98. In an effort to coordinate the activities of organizations and professional groups active in the area of informatics technology for development, the UNIDO secretariat convenes biannual meetings of the Consultative Group on Informatics Technology for Development (COGIT). Those meetings bring together professionals from the field of informatics, identify possible areas of cooperation and consider a mechanism for keeping mutually informed and formulating joint programmes. The last such meeting of the Group was held from 26 to 28 November 1991. It recommended that international cooperation in the field of informatics development be encouraged among international organizations, in particular between UNIDO, UNESCO and ITU, in such areas as networking, skill building and software development centres. It also recommended for consideration by the three organizations a pilot project for one of the regions that would aim at studying the possibility of establishing a regional network using a multimedia approach for education as well as for upgrading industrial manpower in utilization of new technologies.

99. UNIDO's approaches to informatics have one feature in common: increased industrial efficiency at the enterprise level through the application of informatics technology. This is achieved through assistance at the national level, as well as through the promotion of regional cooperation involving close cooperation among developing countries and increased transfer of technology between industrialized and developing countries. The approach focuses on strengthening the application of informatics through the creation of an interface between research, development and production, thereby promoting a cooperative mechanism involving universities, industry and enterprises for developing designs and applications specific to integrated circuits (multichip). An integral part of that interface will be the establishment of informatics incubators, promoting services related to the informatics and information industries and the application of microprocessor control in such areas as energy conservation.

II. FINDINGS AND RECOMMENDATIONS

100. Informatics activities and programmes as described by the responding agencies and offices fall under one or the other of two main groupings of informatics projects, namely:

(a) Projects of a global nature implemented at headquarters of agencies of the United Nations system that, although mainly targeted at supporting their own headquarters' staff functions, and also available for the benefit of other agencies and governmental offices;

(b) Technical cooperation projects that are primarily concerned with, or contain a major component of, informatics, implemented on the national or regional level and designed to reinforce countries' capacities to manage specific substantive programmes.

101. The undertakings reported by the different agencies and organizations of the United Nations system reflect the diversity of the agencies' mandates and cover a broad range of informatics' wide spectrum. Those may be classified under the following general types:

(a) General research and development with potential applications in developing countries, including strategies and policies for informatics;

(b) Technology dissemination, inter alia, through training, seminars, workshops, advisory services, equipment acquisition, system installation and application of software development;

(c) Development of international databases and information systems in specific fields such as:

(i) Management systems;

(ii) Technical/scientific systems;

(iii) Bibliographic systems;

(iv) Statistical systems;

(d) Information networking and communications systems.

102. Established mechanisms exist for coordination of technical cooperation in statistical data processing and informatics in the Statistical Commission and ACC Subcommittee on Statistical Activities, and for statistical information systems in the Subcommittee's Technical Working Group on Statistical Databases. Applications in developing countries are an explicit ongoing concern of these mandates and coordination and collaboration in developing countries' applications could be reinforced.

103. Other mechanisms are available to facilitate access to United Nations information by Member States. For example, the Advisory Committee for the Coordination of Information Systems (ACCIS) was established by decision 1983/9 of the Administrative Committee on Coordination (ACC) to facilitate access by Member States to United Nations information and to promote the improvement of the information infrastructure within the United Nations system. Its mandate includes an advisory service to United Nations system organizations on proposals for the creation of new information systems, and for substantial modifications to existing ones, with a view to avoiding unnecessary duplication within the United Nations system. ACCIS promotes the use of common standards to enhance compatibility of information systems as well.

104. Various mechanisms also exist for inter-agency coordination of work on management information systems, bibliographic and other specialized technical systems, publications and communications systems within the framework of each implementing agency's mission (for example, libraries, engineering,

transnational corporations). However, there is no general framework for their overall coordination and systematic consideration of applications in developing countries.

105. Development of such a framework could be considered by the new Department of Economic and Social Development of the United Nations Secretariat, which is explicitly the United Nations system focal point for general research, policy and coordination issues affecting the developing countries and whose established responsibilities and programmes now cut across a wide range of informatics and data-processing concerns in a comprehensive way. Thus the Department of Economic and Social Development is in a unique position for assuming such a role of leadership in coordinating United Nations activities in informatics for development. This situation is further strengthened by the rich and varied experiences in computers and informatics already available in the Department of Economic and Social Development, primarily in the Statistics Division, which for a long time has been highly visible to many developing countries.

106. The development of an overall coordinating framework would require flexible arrangements for inter-agency consultations making maximum use of existing mechanisms. Regular (but at the same time flexible) coordinating arrangements that would contribute to the effectiveness and the quality of the United Nations system activities for developing countries are needed. The objectives of such arrangements would be:

(a) To identify problem areas in informatics suitable for tackling through coordination/cooperation among United Nations bodies for the benefit of developing countries (for example, when standardization in equipment, software, data or procedures is required);

(b) To propose some (common) informatics projects/programme activities on the national/regional level that would effectively foster the utilization of modern informatics technology for the countries' economic and social development.

Notes

1/ Statistical Office of the United Nations Secretariat (DP/UN/INT-81-041/1).

2/ Department of Technical Cooperation for Development, and Statistical Office, both of the United Nations Secretariat, working paper (UNFPA/INT-88-P09/1, 1989).

3/ Department of Technical Cooperation for Development of the United Nations Secretariat (INT-88-P07/1, 1990).

4/ United Nations publication, Sales No. E.89.XVII.9.

Notes (continued)

5/ United Nations publication, Sales No. E.91.XVII.12.

6/ United Nations publication, Sales No. E.90.XVII.19.

7/ United Nations publication, Sales No. E.92.XVII.6.